WHAT IS CLAIMED IS:

1. A scanning exposure apparatus comprising:

a master stage for scanning a master;

a substrate stage for scanning a substrate,

transfer means for supplying/recovering the substrate to/from said substrate stage, and

positioning means for relatively positioning the substrate and the master, and

scanning velocity determination means for determining a scanning velocity so as to maximize the number of substrates that can be exposed per unit time.

2. The apparatus according to claim 1, characterized in that said scanning velocity determining means determines, as a scanning velocity in actual exposure operation, a lowest one of

a maximum scanning velocity determined from apparatus performance: Vmax,

a scanning velocity determined from an exposure illuminance and a required exposure amount: Vd, and

a scanning velocity at which the number of substrates that can be processed per unit time is maximized, which is determined from the transfer pattern size, a layout of the transfer pattern on the substrate, said transfer means, said master scanning means, said substrate stage scanning means, and said positioning means: Vt.

3. The apparatus according to claim 1, characterized

in that said light source is a light source for emitting pulsed light, and said scanning velocity determining means determines, as a scanning velocity in actual exposure operation, a lowest one of

a maximum scanning velocity determined from apparatus performance: Vmax,

a scanning velocity determined from an exposure illuminance and a required exposure amount: Vd,

a scanning velocity determined from the minimum number of pulses which is required for integration to ensure a uniform exposure amount: Vp, and

a scanning velocity at which the number of substrates that can be processed per unit time is maximized, which is determined from the transfer pattern size, a layout of the transfer pattern on the substrate, said transfer means, said master scanning means, said substrate stage scanning means, and said positioning means: Vt.

4. The apparatus according to claim 3, characterized in that the scanning velocity Vp satisfies

$$Vp = Ws/Pmin \times fmax$$

where Ws is a width of an illumination area, on the substrate in a non-scanning direction, which illuminates part of the transfer pattern, fmax is a maximum frequency of pulsed light emitted from said light source, and Pmin is the minimum number of pulses required for integration to ensure a uniform exposure

amount on the substrate.

5. The apparatus according to claim 2, characterized in that the scanning velocity Vd satisfies

$$Vd = Imax/D \times Ws$$

where Imax is a maximum exposure illuminance, and D is a required exposure amount determined by a photosensitive material.

6. The apparatus according to claim 2, characterized in that the scanning velocity Vt satisfies

$$Vscan.min = \sqrt{\{L \times \alpha accel \times \alpha decel/(\alpha accel + \alpha decel)\}}$$

$$Vt = g(Vscan.min)$$

where αaccel is an average acceleration with which an increase in scanning velocity from 0 to Vt is achieved, αdecel with which a decrease in scanning velocity from Vt to 0 is achieved, L is a length on the substrate which is scanned at a constant velocity in one scanning operation, and g() is an arbitrary function.

7. The apparatus according to claim 2, characterized in that the scanning velocity Vt is calculated by simulation to maximize the number of substrates that can be processed per unit time on the basis of the transfer pattern size, a layout of the transfer pattern on the substrate, and conditions in said master scanning means, said substrate stage scanning means, said transfer means, and said positioning means.

8. The apparatus according to claim 2, characterized

in that the scanning velocity Vt is changed for each transfer pattern in accordance with the transfer pattern size and the layout of the transfer pattern on the substrate.

9. The apparatus according to claim 8, characterized in that the scanning velocity Vt changes in accordance with a length that is scanned at a constant velocity for each shot area in one scanning operation.

10. A device manufacturing method of manufacturing a device, characterized by comprising:

the step of coating a substrate with a resist;

the step of drawing a pattern on the substrate by using an exposure apparatus; and

the step of developing the substrate,

the exposure apparatus including

a master stage for scanning a master;

a substrate stage for scanning a substrate,

transfer means for supplying/recovering the substrate to/from the substrate stage, and

positioning means for relatively positioning the substrate and the master, and

scanning velocity determination means for determining a scanning velocity so as to maximize the number of substrates that can be exposed per unit time.

11. A semiconductor device manufacturing method characterized by comprising:

the step of installing manufacturing apparatuses

for various processes, including an exposure apparatus, in a semiconductor manufacturing factory; and

the step of manufacturing a semiconductor device by a plurality of processes using the manufacturing apparatuses,

the exposure apparatus including

a master stage for scanning a master;

a substrate stage for scanning a substrate,

transfer means for supplying/recovering the substrate to/from the substrate stage, and

positioning means for relatively positioning the substrate and the master, and

scanning velocity determination means for determining a scanning velocity so as to maximize the number of substrates that can be exposed per unit time.

12. The method according to claim 11, characterized by further comprising:

the step of connecting a local area network to the manufacturing apparatuses; and

the step of performing data communication of information about at least one of the manufacturing apparatuses between the local area network and an external network outside the semiconductor manufacturing apparatuses.

13. The method according to claim 12, characterized in that a database provided by a vendor or user of the exposure apparatus is accessed via the external network

to obtain maintenance information of the manufacturing apparatus by data communication, or production management is performed by data communication between the semiconductor manufacturing factory and another semiconductor manufacturing factory via the external network.

14. A semiconductor manufacturing factory characterized by comprising:

manufacturing apparatuses for various processes including an exposure apparatus;

a local area network for connecting said manufacturing apparatuses; and

a gateway which allows the local area network to access an external network outside the factory,

wherein information about at least one of said manufacturing apparatuses can be communicated, and

the exposure apparatus including

a master stage for scanning a master;

a substrate stage for scanning a substrate,

transfer means for supplying/recovering the substrate to/from said substrate stage, and

positioning means for relatively positioning the substrate and the master, and

scanning velocity determination means for determining a scanning velocity so as to maximize the number of substrates that can be exposed per unit time.

15. A maintenance method for an exposure apparatus

which is installed in a semiconductor manufacturing factory and exposes a substrate to a pattern, characterized by comprising:

the step of causing a vendor or user of the exposure apparatus to provide a maintenance database connected to an external network of the semiconductor manufacturing factory;

the step of authorizing access from the semiconductor manufacturing factory to the maintenance database via the external network; and

the step of transmitting maintenance information accumulated in the maintenance database to the semiconductor manufacturing factory via the external network,

the exposure apparatus including:

a master stage for scanning a master;

a substrate stage for scanning a substrate,

transfer means for supplying/recovering the substrate to/from the substrate stage, and

positioning means for relatively positioning the substrate and the master, and

scanning velocity determination means for determining a scanning velocity so as to maximize the number of substrates that can be exposed per unit time.

16. The apparatus according to claim 1, characterized in that the apparatus further comprises a display, a network interface, and a computer for executing network

software, and performs data communication of maintenance information of the apparatus via a computer network.

17. The apparatus according to claim 16, characterized in that the network software is connected to an external network of a factory where the exposure apparatus is installed, provides on said display a user interface for accessing a maintenance database provided by a vendor or user of the exposure apparatus, and enables obtaining information from the database via the external network.